

Translation

PATENT COOPERATION TREATY

PCT/DE2003/000906



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 2001P16203WO	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/DE2003/000906	International filing date (day/month/year) 19 March 2003 (19.03.2003)	Priority date (day/month/year)
International Patent Classification (IPC) or national classification and IPC H01L 29/24		
Applicant SICED ELECTRONICS DEVELOPMENT GMBH & CO. KG		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of <u>5</u> sheets, including this cover sheet.  <input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).  These annexes consist of a total of <u>5</u> sheets.
3. This report contains indications relating to the following items:  I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application

Date of submission of the demand 14 October 2004 (14.10.2004)	Date of completion of this report 26 July 2005 (26.07.2005)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

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## I. Basis of the report

### 1. With regard to the elements of the international application:\*

- ☐ the international application as originally filed
- ☒ the description:  
 pages \_\_\_\_\_ 1-3, 5-24 \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_ 4, 4a \_\_\_\_\_, filed with the letter of \_\_\_\_\_ 23 March 2005 (23.03.2005)
- ☒ the claims:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, as amended (together with any statement under Article 19  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_ 1-17 \_\_\_\_\_, filed with the letter of \_\_\_\_\_ 23 March 2005 (23.03.2005)
- ☒ the drawings:  
 pages \_\_\_\_\_ 1/7-7/7 \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the sequence listing part of the description:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

### 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item. These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

### 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

### 4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/fig \_\_\_\_\_

### 5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

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## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims	1-17	YES
	Claims		NO
Inventive step (IS)	Claims	1-17	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-17	YES
	Claims		NO

## 2. Citations and explanations

1. This report makes reference to the following document:

D1: DE-A-19900169

2. The newly submitted claim 1 results from a combination of the features of the originally submitted claims 1 and 6 and is therefore admissible (PCT Articles 19(2) and 34(2)(b)).

3. The newly submitted claim 1 is construed in light of the description and of the embodiments explained therein.

In particular, the part of the first semiconductor region located above the buried islet region and within which current can be influenced by means of a depletion zone is identified as being the channel region.

Moreover, the wording "the channel regions include a channel conduction region for conducting the current..." is interpreted restrictively (according to the meaning indicated in the description). Since the

channel conduction region is delimited above and below in all the embodiments from the part of the channel region having only the basic doping, the word "include" (in German "umfasst") is construed to mean "enclose", not only "has".

If the newly submitted claim 1 is understood as explained above, the subject matter of this claim is novel over the prior art. The newly submitted claim 1 differs from the closest prior art, document D1, in that a so-called highly doped channel conduction region is located inside the channel region (rather than constituting the entire channel region). This channel conduction region is "embedded" in the part of the channel region with the base doping, i.e. it is delimited above and below from the latter. For this reason, in conducting operation, the current flows preferably in the channel conduction region and the remaining channel region remains current-free. Parameter setting fluctuations for the channel region thus play a very small role in the operation of the component as per claim 1 of the present application. On the contrary, the thickness and doping substance concentration settings of the channel conduction region can be more easily controlled technologically. This represents an improvement over the component disclosed in D1, with respect to technological stability, i.e. greater independence from technologically created fluctuations, possibly leading to a higher yield of the manufacturing process. In addition, the temperature-dependence of the component current-switching capability is reduced. Consequently, the subject matter of the newly submitted claim 1 of the present application appears to be inventive.

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Claims 2-17 are dependent on claim 1 and therefore likewise meet the PCT novelty and inventive step requirements.